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NNSA Employee Donates Kidney, Helps Save Eight Lives

When Thomas "Dody" Koontz decided to give his kidney to a woman at his church, he wasn't thinking about making headlines.

Koontz, who works for the NNSA Office of Defense Nuclear Nonproliferation, simply wanted to give back after his teen-age daughter overcame brain cancer.

The woman at his church found another donor, but Koontz didn't rescind his offer. Instead, he called up Johns Hopkins University and informed them he wanted to give his kidney to a stranger, a random act of kindness that set off an unprecedented series of kidney transplants requiring an intricate donor-matching process and the

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NNSA Awards More Than \$20M in Research Grants

The National Nuclear Security Administration (NNSA) this month awarded more than \$20 million in grants to 28 researchers in 13 states across the country. The awards were made possible through the NNSA's Stewardship Science Academic Alliances (SSAA) program and High Energy Density Laboratory Plasmas (HEDLP) joint program.

Ranging from \$44,565 to \$750,000 per year, the grants support projects that include studying hydrogen and its isotopes, nuclear stewardship research and the planetary science and astrophysical applications of experimental studies at Sandia National Laboratories' Z machine.

One of the SSAA's objectives is to be a long-term recruiting tool to help the national laboratories attract the next generation of nuclear security professionals. Approximately 70 SSAA-supported students

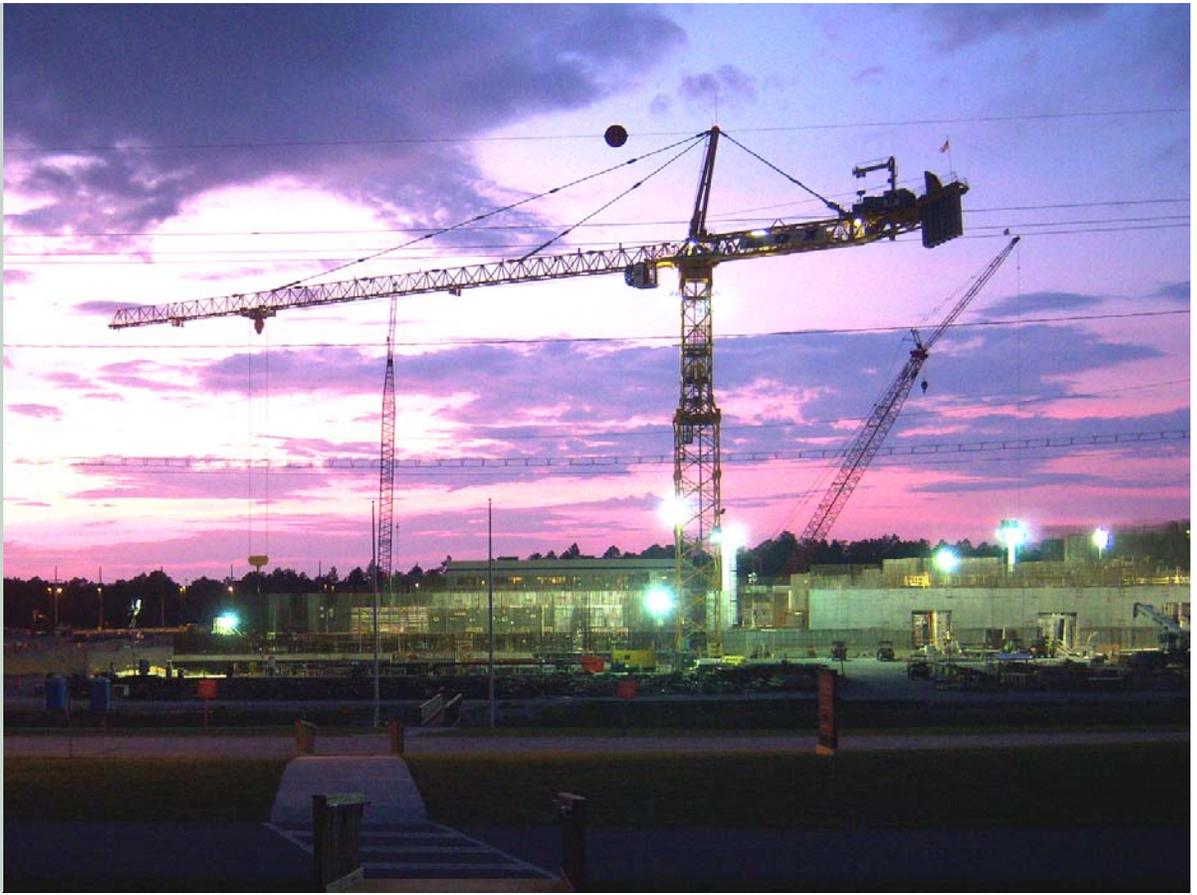
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DETER, DETECT AND INTERDICT: A container with naturally occurring radioactive material is processed through a radiation portal monitor during training designed to protect against trafficking of nuclear and other radioactive materials across international borders and points of entry and exit. See pages 4 and 5 for more on the NNSA Second Line of Defense Program's comprehensive training efforts.

TWO YEARS OF SUCCESSFUL MFFF CONSTRUCTION:

On schedule and within budget, the NNSA marked the second year of construction of the Mixed Oxide Fuel Fabrication Facility (MFFF) at the Savannah River Site (SRS). When completed, MFFF will enable the U.S. to convert 34 metric tons of surplus weapons-grade plutonium into mixed oxide fuel (MOX) for existing nuclear power plants — producing enough power to provide electricity to one million homes for 50 years.



NNSA Awards More Than \$20M in Grants to Researchers Across America

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have been hired at the labs since the program's inception in 2002.

The HEDLP program combines projects previously funded by NNSA's SSAA program in the research area of high energy density physics and by DOE's Office of Science HEDLP Program and Innovative Confinement Concepts Program.

More information about the program can be found on NNSA's website at <http://nnsa.energy.gov/dsup/>.

NNSA Employee Donates Kidney, Helps Save Eight Lives

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national transport of multiple organs.

As a result of his donation, Koontz helped save eight lives — and earned national media attention in outlets like the *Washington Post* and *Baltimore Sun*.

But the attention and news stories matter little to Mr. Koontz. He has a more straightforward outlook on the whole affair; "God helped me, so I was trying to give something back to God. You only need one kidney."

Koontz, a retired Marine Corps Lieutenant Colonel who formerly worked as a DoD civilian at the Joint Warfare Analysis Center, has worked for NNSA since September 2008. As the operations manager in the Office of International Operations, he leads staff and operations in Austria, Azerbaijan, Bulgaria, Georgia, Japan, Ukraine, Pakistan, and Kazakhstan.

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NNSA Works With Air Force to Conduct Successful W80 JTA Test

The NNSA, in close working cooperation with the U.S. Air Force, recently conducted a successful test of a Joint Test Assembly (JTA) for the W80 warhead.

A JTA is a set of sensors and hardware used during flight tests to ensure that weapons perform as designed. The purpose of the test was to evaluate overall performance of the nuclear cruise missile weapon system.

The JTAs are produced by NNSA in support of the Joint Flight Test Program between the Department of Defense (DoD) and the NNSA. They are built to simulate the actual weapon configuration and use as much war reserve hardware as feasible.

"This successful test illustrates that the NNSA and DoD are committed to ensuring that all weapon systems perform as designed," said Brig. Gen. Garrett Harencak, NNSA principal assistant deputy administrator for military application. "This strong working cooperation is vital to U.S. national security."

The W80 JTA was on board a B52-H and flown by the 5th Bomb Wing from Minot Air Force Base. The flight was launched on an Air Launched Cruise Missile at the Utah Test and Training Range.

The JTA includes a telemetry system which is used to collect and transmit data on the warhead. The data is fed into a reliability model developed by Sandia National Laboratories to evaluate the warhead reliability.

The Air Force assesses missile performance and reliability, and the NNSA assesses the same for the warhead.

To The Moon: Y-12 Technology Part of Apollo 11 Anniversary

Forty years ago, American astronauts shot for the moon — and brought a little of it back with help from scientists and engineers at the Y-12 National Security Complex in Oak Ridge, Tenn.

In preparation for the historic Apollo 11 launch in July 1969, Y-12 experts diligently worked to develop the "moon boxes" the astronauts would use to bring nearly 50 pounds of moon rocks and soil back to Earth. The moon boxes were also used on subsequent Apollo missions, bringing a total of more than 840 pounds of lunar material back for research.

NASA selected Y-12 for its metal-working expertise, and special facilities were created at the site to enable the production of the moon boxes.

Each box was machined from a single piece of aluminum, seamless except for the lid opening, which had a metalized gasket that firmly sealed when closed. Four metal straps secured the lid to the box during transit.

There were two moon boxes on each Apollo flight, and the boxes can be viewed at the Smithsonian Air & Space Museum in Washington, the American Museum of Science and Energy in Oak Ridge, the Y-12 History Center and at NASA displays across the country.

Y-12's involvement in the Apollo 11 mission is yet another example of history made possible by the science and technology experts who labor behind the scenes every day across NNSA's enterprise.

To watch an informational video about the moon boxes, visit the NNSA YouTube channel at www.youtube.com/NNSANews.



HISTORY MADE POSSIBLE: Y-12 experts inspect this moon box and its components.

Second Line of Defense

The NNSA's Second Line of Defense (SLD) strengthens the overall capability of foreign countries to deter, detect and interdict illicit trafficking of nuclear and other radioactive materials across international borders and points of entry/exit

United States or its allies and international partners.

Through its comprehensive training efforts, the SLD program prepares partner countries to detect, locate and identify radioactive materials. The training is designed to enhance

Pacific Northwest National Laboratory (PNNL), the lead training lab for the SLD program, utilizes the world class HAMMER facility for comprehensive hands-on training and real-life skills development on an array of

radiation detection equipment. The training is currently being conducted at the recently dedicated International Training Facility supported by the Department of State Nonproliferation and Disarmament Fund. To date, PNNL has provided HAMMER training to more than 1,000 international students from 44 countries.

PNNL subject matter experts have developed an extensive training curriculum and present modules on technical topics such as the threat from weapons of mass destruction, general radiation awareness, radiation



RADIATION DETECTION DEVICES: The focus of the Second Line of Defense/Customs Border Patrol Training is to prepare officers to intercept smuggled nuclear and radiological materials to reduce or eliminate the threat of nuclear proliferation and nuclear terrorism. Handheld radiation detection devices play an integral role in the detection of possible threats for both homeland and international border crossings.

as well as through the global maritime shipping network. This supports international nonproliferation efforts that reduce the probability that special nuclear and other radioactive materials could be used in a weapon of mass destruction or a radiological dispersal device against the

the country's capacity for long-term operations.

The NNSA's SLD program offers training at the U.S. Department of Energy's (DOE's) Volpentest Hazardous Materials Management and Emergency Response (HAMMER) Training and Education Center located in Richland, Wash.

detection technologies, and alarm analysis and response procedures. A key aspect of this training is the strong emphasis on

MATERIALS DETECTION: At Pacific Northwest National Laboratory part of the training conducted through the International Border Security Training Program includes methods for discovering chemical and biological materials.



International Training - as Real as it Gets



scenario based field exercises. These exercises use special nuclear materials and radiological sources. They also use the actual model of radiation portal monitoring and handheld inspection equipment that is provided to partner countries as part of the SLD cooperation.

"Giving foreign operators the opportunity to observe firsthand how the SLD equipment behaves in the presence of proliferation concern materials is an invaluable experience," said Dave Kostorowski, PNNL SLD program manager. This comprehensive training aims to teach participants to both operate the radiation detection equipment and synthesize operational requirements and response procedures for the specific circumstances they may face in their country.

DETECT, LOCATE, IDENTIFY: PNNL's Matt Smith explains different handheld radiation detection tools to officials from Mongolia during training at the HAMMER facility.

SLD Teams With Host Country Trainers

The SLD program deploys mobile training teams to provide in-country instruction which occurs in parallel to the acceptance testing of the installed systems. The teams give in-depth training focusing on situational operations of the radiation portal monitors, hand-held equipment, and related communications systems. The SLD training strategy employs a train-the-trainer approach to help indigenize training and foster a collaborative "team teaching" approach. This supports the ultimate strategy of transferring ownership of the jointly developed training program to the partner country, enabling its long-term program sustainment.



LANL Nonproliferation Work Leads to Advances in Hurricane Monitoring

A team of Los Alamos National Laboratory (LANL) researchers correlating lightning frequency with hurricane intensity is preparing for the peak of hurricane season, ready to collect data in order to better understand and predict future hurricane behavior.

The project evolved, however, not from meteorological research but from an NNSA nuclear nonproliferation effort to study nuclear electromagnetic pulses (EMPs). LANL, with funding and direction from NNSA, has a long history of studying EMPs. Because of certain similarities between

EMPs and lightning strikes, LANL has also built significant breadth, depth and expertise in the measurement, analysis and overall science of lightning.

"It is imperative that we are able to characterize and delineate manmade and natural fast transient events: the former being EMP and the latter being lightning," said Cheng Ho, one of the project leaders.

Chris Jeffery, Xuan Min Shao, Cheng Ho, Tim Hamlin, and Nick O'Connor, all of Space and Remote Sensing, are part of a team now building on that

science to explore the potential link between a burst of increased lightning activity in a hurricane's eye wall and the impending increase in storm intensity.

The Hurricane Lightning Project uses GPS-based sensors to collect lightning data in the New Orleans area which are routed back to computers at LANL. A related project, the Los Alamos Sferic Array is currently deploying even greater-range sensors across Florida and the coastal regions of Texas.

The projects were motivated by the lightning observations of Hurricane Rita in 2005 that were collected for NNSA by a LANL nonproliferation EMP monitoring and geolocation system deployed in Florida.

Over many years, LANL has developed and deployed ground-based arrays to support nuclear security missions. Exploitation of the data has allowed the scientists to conduct forefront scientific research that led to new discoveries with applications in new and unexpected arenas. As Ho described it, "As we move forward, we expect the scientific effort to yield results, knowledge and expertise that will in turn benefit our nuclear security mission. This critical interplay of scientific research and mission execution will continue to be the theme of how LANL contributes to the science for nuclear security."



LLNL and OST Place in U.S. SWAT Competition

Performing under fire is the essence of Special Weapons and Tactics (SWAT) team competitions, and the Lawrence Livermore National Laboratory (LLNL) Special Response Team (SRT) can count itself among the nation's elite.

Livermore's SRT finished third at the U.S. National SWAT Championships, an international competition, narrowly ceding to the first place team from Canada and second place counter-terrorism team from Germany. Department of Energy (DOE) teams performed well with Hanford finishing fourth and NNSA's Office of Secure Transport (OST) team sixth.



AMONG THE NATION'S ELITE: A member of Lawrence Livermore National Laboratory's Special Response Team competes during the recent U.S. National SWAT Championships.

The annual championship, which includes some of the world's best SWAT teams, was held at the U.S. Shooting Academy in Tulsa, Okla. this summer with 18 teams competing in the championship. The competition consists of eight events with teams

competing head-to-head. Officers compete in full tactical gear and are provided limited rounds for each event.

LLNL finished just one point behind the German GSG-9 team, a counterterrorism team mobilized after the massacre at the 1972 summer Olympics in Munich, Germany. The top team with 16 points was Bruce Power from the Canadian equivalent of DOE. GSG-9 scored 21 and LLNL 22 points (the last place team finished with 132 points).

NNSA Attracts Crowd at Public Service Career Fair

The NNSA was one of more than 70 federal agencies to participate in the Federal Career Fair last month at the National Building Museum in Washington, D.C. The event, which was sponsored by the Partnership for Public Service, attracted more than 6,000 potential employees who waited in line for up to 20 minutes to speak with different agency representatives.

NNSA stood out in the crowd by utilizing a laptop and wireless internet to attract a broader range of potential employees to its table. NNSA recruiters used the Web to highlight the NNSA mission and program offices, as well as to demonstrate the initial steps for navigating through the Office of Personnel Management's USAJobs.gov website. NNSA also handed out an information packet that included an overview of entry- and senior-level positions at NNSA, brochures on the Future Leaders Program, and give-aways such as pens and flashlights. Shalisha Dapaa, NNSA's director for the Recruitment and Entry Programs Division, was interviewed at the career fair by two local news stations.

The fair was yet another example of the NNSA's continued commitment to recruiting the best and most talented workforce possible.



Photo by Sam Kittner/Kittner.com

Livermore Staffer Cleared Afghan Roadway IEDs

Patrick Stevens of NNSA's Lawrence Livermore National Laboratory (LLNL) in California led a three-man explosive ordnance disposal (EOD) team for six months last year that cleared roadways of improvised explosive devices (IEDs). His team was hit by IEDs three times in about three weeks - and on two occasions Stevens was almost killed.

Working in Paktika Province about 150 kilometers south of Kabul, Stevens and his team were riding in a Mine Resistant Ambush Protected (MRAP) vehicle on Aug. 14, 2008, when they dipped into a deep wadi, or creek bed. An IED with two 20-pound landmines exploded. It lifted the V-hulled, heavily armored, 23-ton vehicle about two to three feet off the ground, according to observers. Stevens hit the roof of the vehicle, came down, went

unconscious for about 30 seconds and then checked on the condition of his crew and vehicle.

"I didn't realize I was hurt until I exited the rescue vehicle and found I couldn't walk," he recalled. In time, Stevens regained his ability to walk and stayed with his team. Today, he is an enthusiastic fan of the MRAP armored carriers. "They are the best vehicle on earth."

Stevens' team's mission was to

render safe, disarm or destroy, and gather evidence of any unexploded ordnance, IEDs, weapons caches and homemade explosive devices found while conducting route clearance patrol operations. In the first two months of their deployment, the team neutralized more than 50

roads or trails ahead of 100-plus locally driven supply trucks headed to coalition forward operating bases that were 60 and 160 kilometers away. We usually drove between the speeds of 5 and 15 kilometers per hour, so the days were slow and long.

"The route clearance patrol missions would take six to 20 days to complete, about double what the original time frame we were given before we left. We lived out of our vehicles and slept on cots next to the vehicles at night in case of attack. On our typical mission, we would be engaged one to four times a day by insurgents, usually at long distance, with inaccurate small arms fire and an IED or two." In the beginning, every day was nerve-racking. They had been trained for

wartime, but mostly for Cold War scenarios.

A master sergeant in the U.S. Air Force Reserve, Stevens returned to work at LLNL on June 15, 2009, after recovering from back injuries. He works in the Cyber Security Program as a system administrator/cyber analyst.



Patrick Stevens

insurgent IEDs and conducted more than 40 post-blast analyses of IED strikes against coalition and Afghan forces' vehicles and facilities.

"The area in which we were operating had been neglected by coalition support for more than a year and had an extremely heavy insurgent population," Stevens said. "Our missions would typically consist of clearing the

2009 R&D 100 Awards

Continuing its strong leadership in science, engineering and innovation, projects supported by the NNSA or conducted across the nuclear security enterprise were recognized with nearly two dozen of this year's R&D 100 Award winners. For more information on the award-winning work, visit NNSA's website at: <http://nnsa.energy.gov/news/rd100>.